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OPERATIONAL IMPLICATIONS OF SOVEREIGNTY AND  
FREEDOM OF NAVIGATION IN SPACE

by

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## ***Acknowledgment***

*And the Lord said, 'Who shall I send, and Whom shall go for Us?' Then said I, 'Here am I, send me.'*

Isiah 6:8 (KJV)

### *Abstract*

What is the operational impact and significance upon U.S. Air Force operations in applying the terrestrial concepts of sovereignty and freedom of navigation to U.S. national interests and assets in space? Can these concepts provide guidance for the formulation of Air Force doctrine regarding military operations in space?

The operational impact and significance are examined through a systematic approach from the perspective of a present-day fictional Chinese staff officer in the People's Liberation Army, Senior Colonel Xua. He is tasked to prepare an information paper regarding how the U.S. may react when confronting issues of sovereignty and freedom of navigation in space, and begins by examining the historical background of the space treaties. This is followed by an examination of current U.S. space policy and military doctrine. Senior Colonel Xua next reviews the application of sovereignty and freedom of navigation in space through an analytical framework involving the decision-making process for circumstances authorizing use of military force. He also examines the analytical framework in the context the methodology for actual employment of force. Finally, Senior Colonel Xua discusses two possible courses of action the U.S. may take to redress perceived limitations in current space treaty or doctrine. The conclusion drawn is the conceptual framework and methodology underlying the terrestrial use of military force is similarly applicable to military force concerning U.S. national space interests and space-based assets. Concepts such as sovereignty and freedom of navigation in space provide the foundation for the development of space-related military doctrine and training.

## Chapter 1

### Introduction

*The most important thing is to have a flexible approach...The truth is no one knows exactly what air fighting will be like in the future. We can't say anything will stay as it is, but we also can't be certain the future will conform to particular theories, which so often, between the wars, have proved wrong.*

—Brigadier General Robin Olds, USAF

What is the operational impact and significance upon U.S. Air Force operations in applying the terrestrial concepts of sovereignty and freedom of navigation to U.S. national interests and assets in space? Can these concepts provide guidance for the formulation of Air Force doctrine regarding military operations in space?

An answer to the first question is that the intellectual and conceptual framework and methodology underlying the terrestrial concepts of sovereignty and freedom of navigation are also applicable to U.S. national space interests and space-based assets. In response to the second question, yes, the concepts of sovereignty and freedom of navigation in space provide a foundation for the development of necessary doctrine and training. The USAF must be able to address operational use of force concerns regarding threats to U.S. national space interests and space-based assets. For example, can a satellite maneuvering in an orbit possibly presenting a threat to an U.S. space-based system be denied that orbit by the use of force? Does a nation assume responsibility for the actions committed by or through its space-based assets? If so, is

the responsibility for hostile actions shared when the system belongs to a corporation, conglomerate or coalition of states?

## **Methodology**

The following methodology is used in the analysis of the concepts and framework:

- First, there is an overview of the pertinent portions of the applicable space treaty, analogous sections from the Law of the Sea Convention and military space doctrine.
- Second, the paper examines how the concepts of sovereignty and freedom of navigation are applied in space through an analytical framework involving how and when the use of force is appropriate.
- Third, the operational implications for USAF warfighters are discussed.
- Finally, the potential deficiencies in the terms of the space treaty and the absence of doctrine are detailed and assessed.

Where this paper departs from a traditional presentation is the style in which the methodology is presented. The style used to analyze and present the issues for this paper is from the perspective of fictional staff officer in the present Chinese People's Liberation Army (PLA). Senior Colonel Xua, the fictional staff officer, is tasked with preparing an information paper for a central defense committee regarding how the U.S. views and may react to issues of sovereignty and freedom of navigation concerning its national interests and space-based assets. The presentation style for the material in this paper was selected to provide the information and analysis from the perspective of how it may be viewed by someone from "outside the system." The paper is written using this style beginning with Chapter 2 and concluding in Chapter 4. Before examining the substantive issues, it is necessary to provide a short description of the



significance of the issues and assumptions used in the paper, as well as an overview of the argument underlying the conclusions made in the paper.

## **Background and Significance**

The real estate maxim regarding the three most important aspects of property being “location, location, location” is historically applicable to military operations. This is generally true whether seizing dominant terrain or executing air operations. Achieving tactical, operational and strategic superiority or supremacy is logically an important element for successful combat operations. Likewise, it should follow that it will be similarly applicable for military operations seizing the “high ground” in space as it is for conventional air operations. The reliance upon space-based systems by U.S. military forces provides those forces with a high degree of operational effectiveness. The systems U.S. forces commonly rely upon include missile warning systems, navigation, global positioning, communications, Intelligence, Surveillance, Reconnaissance (ISR), Command and Control (C<sup>2</sup>) and C<sup>2</sup> plus communications and computers (C<sup>4</sup>). Some concerned parties, such as General Meyer (the previous commander in chief (CINC) of U.S. Space Command (USSPACECOM)) believe U.S. space-based assets are prime targets for the next opponent the U.S. may have to face.<sup>1</sup> Denial, destruction, degradation or disruption of comparatively unprotected, expensive and difficult to replace “high value” U.S. space-based assets can provide an opponent with significant strategic and operational benefits.

Indeed, the tenets of airpower and the USAF core competencies appear increasingly dependent upon space-based assets to achieve a high level of proficiency and success. This dependence upon space-based assets has been demonstrated from DESERT STORM to ALLIED FORCE.<sup>2</sup> This is not to say that the USAF, or any of the other services, could not carry out military operations without these assets. General Eberhart, CINCSPACE articulated this

recently in his testimony before the Senate Armed Services Committee Strategic Subcommittee. He stated “The contributions of our space forces in Operation ALLIED FORCE were vital. Could we have fought and won without space-based forces in ALLIED FORCE? Yes, but we may have lost many lives, caused a great deal more collateral damage and fought a much longer conflict.”<sup>3</sup>

General Eberhart’s remarks illustrate the need to enhance not only space-based dominant maneuver capability, but also full-dimensional protection for U.S. national interests in space and U.S. space-based assets. Looking to the future, virtually all of the operational concepts set out in Joint Vision 2020 (dominant maneuver, precision engagement, focused logistics, full dimensional protection, information operations and joint C<sup>2</sup>) rely heavily upon space-based assets.<sup>4</sup> To remain capable for providing the quantity and quality of power projection it is accustomed to, the USAF must be capable of articulating the rationale for why use of force to defend U.S. national space interests and space-based assets is consistent with political and legal constraints.

## **Assumptions**

To narrow the scope of analysis to meet page limitation requirements, this paper assumes that the debate over the lack of an internationally accepted delineation of precisely where “airspace” ends and “outer space” begins is beyond the scope of the paper. The significance behind the assumption is to focus the paper on the issues presented rather than attempting to also include an analysis of where a nation’s right to limit access to its sovereign “airspace” terminates and unrestricted “space” access begins. The second assumption for this paper is based upon current international treaty prohibitions against anti-ballistic missile defensive systems and

space-based weapons of mass destruction. Any system referred to in this paper is assumed not to be either of the specifically prohibited systems.

## **Overview of Argument**

The U.S. and specifically the USAF must be prepared to deter foreign interference or hostile actions against U.S. national space interests and space-based assets. Failing deterrence, the U.S. and USAF must be prepared to defend the national space interests and space-based assets within the constraints of international treaty obligations, international law and customary international practice. Likely venues of conflict may be framed within the context of issues involving the sovereignty or freedom of navigation of U.S. national space interests and space-based assets. Inherent in deterrence and defense is the requirement for operational planners and perhaps more importantly, political leadership, to think through the controversial and complex issues regarding sovereignty and freedom of navigation in space. Specifically, the USAF institutionally needs to analyze, wargame, exercise and develop a common understanding for how sovereignty and freedom on navigation issues may impact or determine the appropriateness for the use of force in defense of U.S space-based interests prior to an actual crisis or incident. Time constraints at the time of an incident or crisis may not allow for significant debate or contemplation prior to a determination to use force (or not) and the justification for the use of force. In the next chapter, the fictional PLA Senior Colonel Xua provides the first step in this examination with an overview of contextual background issues and concepts.

## Notes

<sup>1</sup> General Richard B. Myers, *"Implementing our Vision for Space Control"* United States Space Foundation, Colorado Springs, Colorado, 7 April 1999  
<http://www.spacecom.af.mil/usspace/speech15.htm>

<sup>2</sup> *"Air Force Basic Doctrine,"* Air Force Doctrine Document 1, September 1997.

<sup>3</sup> Statement of General Ralph E. Eberhart, USAF, Commander in Chief North American Aerospace Defense Command and United States Space Command Before the United States Senate Armed Services Committee Strategic Subcommittee, 8 March 2000  
<http://www.peterson.af.mil/usspace/cinc8mar00.htm>

<sup>4</sup> Joint Vision 2020, CJCS Publication, Director for Strategic Plans and Policy, J5 Strategy Division, U.S. Government Printing Office, June, 2000 (pages 20-33).

## Chapter 2

### Contextual Background

*Thus it is said: 'Know the other and know yourself: One hundred challenges without danger; Know not the other yet know yourself: One triumph for one defeat; Know not the other and know not yourself: Every challenge is certain peril.'*

—Sun Tzu, *The Art of War*

(UNCLASSIFIED)

MEMORANDUM FOR CENTRAL DEFENSE COMMITTEE

FROM: PLA Department of Research (Senior Colonel Xua)

SUBJECT: United States and Issues of Sovereignty and Freedom of Navigation in Space.

We have finished the research and analysis for the subject your committee forwarded to our department. We are aware that this matter is of some urgency based upon ongoing planning regarding the Taiwan situation. Accordingly, we have distilled the information to the minimum amount needed for an adequate comprehension of the issues. “Sovereignty” as used in this paper, is the right (or responsibility) of a nation for actions taken against, or in protection of their space-based assets or interests. “Freedom of Navigation” is considered as the capability of being able to maneuver or place space-based assets in space or earth orbits consistent with international space treaties.

The analysis and conclusions are presented at the end of this memorandum. In short, our research leads to the following conclusion:

- The U.S. reliance upon space is both their strength and weakness. In essence, it is a “center of gravity” for exploitation.

- The U.S. will likely employ the use of force in response to incidents or crises involving the sovereignty and freedom of navigation involving their national space interests and space-based assets. They may choose to do so either with a “sword” (offensively) or a “shield” (defensively).

- The U.S. may attempt to redress deficiencies in their doctrine for how and when the use of force is appropriate in space. They are unlikely to seek amendments to current space treaties to include specific provisions authorizing the use of force.

In order to understand the analysis and conclusion in context, it is important to first comprehend the background information underlying the U.S. position regarding sovereignty and freedom of navigation in space. The committee will find a useful historical situational overview of the 1967 United Nations *“Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space Including the Moon and Other Celestial Bodies.”* This treaty is commonly called the Outer Space Treaty (“1967 OST”). Next is an examination of sovereignty and freedom of navigation in the context of the 1967 OST, followed by a brief examination of the maritime precedents of the concepts. The last section of the contextual background provides an overview of U.S. military space policy and doctrine that frames the “use of force analysis” in relation to sovereignty and freedom of navigation in space. Each topic is addressed in turn.

## **Historical Overview**

The development of U.S. space policy began when the U.S. passed the National Aeronautics and Space Act of 1958. This act established the civilian and military space

programs. At the core of the act is the language that U.S. use of space is “devoted to peaceful purposes for the benefit of all mankind.”<sup>1</sup> However, the act also charged the Department of Defense with the primary responsibility and direction for development of weapons systems, military operations and the defense of the United States<sup>2</sup> (the wording is sufficiently broad to provide a conceptual foundation for military space policy). As the U.S. and U.S.S.R began the “space race” in earnest during the early 1960s, a series of United Nations Resolutions were passed to address the international community’s desire for the use of space. These resolutions form the core from which the major provisions of the 1967 OST are drawn. The resolutions were the *International Cooperation in the Peaceful Uses of Outer Space* (1962), *Declaration of Legal Principles Governing Activities of States in the Exploration* (1963) and *Use of Outer Space* and *International Cooperation in the Peaceful Uses of Outer Space* (1963)

### **1967 Outer Space Treaty**

The 1967 OST is the first “treaty” to govern the use of outer space. It rises to the level of “law” in the sense that the U.S. Senate ratified the treaty, thus obligating the U.S. to abide by the terms and conditions of the treaty. The specific language and concepts regarding the use of space, sovereignty, and freedom of navigation are set out below (the full text of the treaty is attached for the committee’s reference at the appendix).

Article I: The exploration and use of outer space, including the moon and other celestial bodies, shall be carried out for the benefit and in the interests of all countries...and shall be the province of all mankind.

Article II: Outer space, including the moon and other celestial bodies, is not subject to national appropriation by claim of sovereignty, by means of use or occupation, or by any other means.

Article VI: Parties to the Treaty shall bear international responsibility for national activities in outer space...whether such activities are carried on by governmental agencies or by non-governmental entities, and for assuring that national activities are carried out in conformity with the provisions set forth in the present Treaty.

The activities of non-governmental entities in outer space, including the moon and other celestial bodies, shall require authorization and continuing supervision by the appropriate State Party to the Treaty.

Article VIII: A State Party to the Treaty on whose registry an object launched into outer space is carried shall retain jurisdiction and control over such object, and over any personnel thereof, while in outer space or on a celestial body. Ownership of objects launched into outer space, including objects landed or constructed on a celestial body, and of their component parts, is not affected by their presence in outer space or on a celestial body or by their return to the Earth.<sup>3</sup>

Other treaties relating to space include the *Rescue and Return of Astronauts and Space Objects Treaty of 1968*, the *Liability Convention of 1972*, the *Registration of Objects Launched into Outer Space Treaty of 1975*, the *Test Ban Treaty of 1963*, the *Anti-Ballistic Missile Treaty of 1972*, and the *Environmental Modification Treaty*. The most important point for the committee to note from these treaties is the absence of any specific prohibition against space-based military operations or weapons (other than the prohibition in Article IV of the 1967 OST from placing weapons of mass destruction such as nuclear weapons, in space<sup>4</sup>). In other words, “peaceful” use does not necessarily mean “non-military.” The U.S. may choose to strictly construe the terms and conditions in the treaty. That is, if the language does not specifically prohibit an activity, then an activity is permissible. This approach is supported through the position that if the framers of the 1967 OST had wanted to permit only “non-military” activities in space, they would have specifically stated that in the language of the treaty. If the strict interpretation of the 1967 OST has not been expressly adopted, the U.S. has implicitly adopted it, as demonstrated by their use of space for military communication satellites, global positioning, ISR and the like.

### **1982 Law of the Sea Convention**

The space-based concepts of sovereignty and freedom of navigation were not created out of whole cloth, nor did they spontaneously appear. These concepts arose from customary international maritime practice over hundreds of years, culminating into codification in a formal



treaty with the LOS Convention in 1982.<sup>5</sup> By contrast, sovereignty and freedom of navigation, as applied to space have not had such an extended period of customary international practice including conflicts to obtain, expand or protect those rights as they apply to space. However, the concepts were considered sufficiently important to be incorporated into the 1967 OST. The codification of such maritime concepts in the 1967 OST is a logical extension of the concepts from one environment (the sea) to a generally similar environment (space), in terms of breadth and scope of the environments.<sup>6</sup> The concept of freedom of navigation is contained within articles 87 and 90 of the LOS Convention.

Article 87: “Freedom of the high seas” states in pertinent part: 1. The high seas are open to all States, whether coastal or land-locked...It comprises, inter alia, both for coastal and land-locked States: (a) freedom of navigation;...2. These freedoms shall be exercised by all States with due regard for the interests of other States in their exercise of the freedom of the high seas, and also with due regard for the rights under this Convention with respect to activities in the Area.

Article 90: “Right of navigation.” Every State, whether coastal or land-locked, has the right to sail ships flying its flag on the high seas.<sup>7</sup>

The concept of sovereignty is contained with Articles 89, 91, 92 and 95 of the LOS Convention:

Article 89 “Invalidity of claims of sovereignty over the high seas:” No State may validly purport to subject any part of the high seas to its sovereignty.

Article 91 “Nationality of ships:” 1. Every State shall fix the conditions for the grant of its nationality to ships, for the registration of ships in its territory, and for the right to fly its flag. Ships have the nationality of the State whose flag they are entitled to fly. There must exist a genuine link between the State and the ship. 2. Every State shall issue to ships to which it has granted the right to fly its flag documents to that effect.

Article 92 “Status of ships:” 1. Ships shall sail under the flag of one State only and, save in exceptional cases expressly provided for in international treaties or in this Convention, shall be subject to its exclusive jurisdiction on the high seas.

Article 95, “Immunity of warships on the high seas”: Warships on the high seas have complete immunity from the jurisdiction of any State other than the flag State.<sup>8</sup>

Having established the historical foundation for the 1967 OST and the frame of reference for the concepts of sovereignty and freedom of navigation in space, it is appropriate to examine U.S. space policy and pertinent military doctrine impacting and shaping this analysis.

## **U.S. Military Space Policy and Doctrine**

This portion of research is a review of the U.S. open-source (unclassified) documents detailing official U.S. policy and intentions concerning space. We believe U.S. policy and doctrine play an important role linking the likely U.S. response to incidents in space involving sovereignty or freedom of navigation with how such incidents or crises will be evaluated in the context of the decision-making process to authorize the use of force.

In order to put the documents discussed below in perspective, a brief overview is necessary. The National Security Strategy (NSS) is issued by the U.S. President and provides the overarching (“the big picture”) policy and direction for U.S. national security strategy worldwide and across the spectrum of involvement worldwide.<sup>9</sup> Derived from the NSS is the National Military Strategy (NMS), issued by the Chairman of the Joint Chiefs of Staff (CJCS). This document reflects the objectives, concepts, tasks and capabilities required for the U.S. military services to execute and support the policies and strategy from the NSS.<sup>10</sup> Consistent with the principles articulated in the NMS is “joint doctrine.” Joint doctrine is issued by the CJCS (in coordination with the combatant commands, military Services and the Joint Staff) and reflects “Fundamental principles that guide the employment of forces of two or more (U.S. military) Services in coordinated action toward a common objective.”<sup>11</sup> Finally, the U.S. Air Force (USAF) doctrine detailed below reflects “officially sanctioned beliefs and warfighting principles that describe and guide the proper use of air and space forces in military operations”<sup>12</sup>

One key assumption however is that the Americans will act consistent with their policies and doctrine. What is unknown is whether they possess the political and military will to act consistent with their policy and doctrine during an actual military incident or crisis regarding space-based assets or interests. Again, the lack of “real” experience may make any crisis a case of first impression that will create much friction within their political and military leadership. For the purpose of this paper our department assumes that the U.S. will act consistently, though we leave that ultimate determination to the more politically experienced members of our government. The committee should be mindful that U.S. policy and doctrine are neither immutable nor inflexible, and that they appear to be capable of being modified based upon changes in political administrations and the international environment.

To begin, the 1999 National Security Strategy reflects the importance of space to the U.S. in stating "Unimpeded access to and use of space is a vital national interest--essential for protecting U.S. national security, promoting our prosperity, and ensuring our well-being."<sup>13</sup> The word “vital” is important because it connotes the willingness of the U.S. to use military force - unilaterally if necessary - to protect those vital interests.<sup>14</sup> The NSS further expresses U.S. intentions by stating

Consistent with our international obligations, we will deter threats to our interests in space, counter hostile efforts against US access to and use of space, and maintain the ability to counter space systems and services that could be used for hostile purposes against our military forces, command and control systems, or other critical capabilities.”<sup>15</sup>

Flowing from the NSS, the most current version of the NMS (1997) describes one important U.S. military capability as space control.

It is becoming increasingly important to guarantee access to and use of space as part of joint operations to protect US interests. Space control capabilities will ensure freedom of action in space and, if directed, deny such freedom of action to adversaries.<sup>16</sup>

As an aside, both the NSS and NMS will likely be updated sometime within 2001 because of the change in political administrations. We do not believe there will be significant changes regarding the U.S. policy regarding space in either of the documents, though we will certainly reexamine our analysis once these documents have been issued.

Joint doctrine pertaining to USSPACECOM mandates conducting joint space operations in support of space force enhancement, space support and space control.<sup>17</sup> Space control is generally described in the doctrine as providing freedom of action in space while denying it to an opponent or adversary during a conflict.<sup>18</sup> The objectives of space control are surveillance, protection of assets, prevention of unauthorized access and “negating hostile space systems that place US and allied interests at risk.”<sup>19</sup> The stated space control mission of USSPACECOM involves establishing and maintaining space superiority in order to retain our ability to launch and operate satellites and deny an adversary the same.<sup>20</sup>

USAF doctrine defines the space power function of “counterspace” as “those operations conducted to attain and maintain a desired degree of space superiority by the destruction or neutralization of enemy forces.”<sup>21</sup> The doctrine further categorizes counterspace operations into subcategories of offensive counterspace (OCS) and defensive counterspace (DCS). The goal of OCS is deception, disruption, denial, degradation or destruction of space assets or capabilities through attacks on the space, terrestrial or link elements of the enemy space systems.<sup>22</sup> DCS are actions, both active and passive, to protect U.S. space-based capabilities from enemy attacks.<sup>23</sup>

In summary, U.S. policy and doctrine clearly contemplate taking both offensive and defensive military actions to protect U.S. interests if necessary. We interpret this to mean the U.S. could consider an attack on space-based assets (sovereignty) or denial of access to space or a particular earth orbit (freedom of navigation) as a threat to their vital national interests based

upon their policy and doctrine. As a result, the U.S. will likely choose to take military actions necessary to defend those perceived vital national interests. Offensive military action may occur under the guise of “preemptive self-defense” if the U.S. determined the situation was serious enough. However, we again defer to the more experienced branches of government to determine whether they actually possess the political will to do so in an actual crisis. However, the next section of research may assist with that determination through examining the operational implications for how the use of force may be applied in space-related incidents involving sovereignty and freedom of navigation.

### Notes

<sup>1</sup> Title 42, United States Code Service, Sections 2451-2484.

<sup>2</sup> Title 42, United States Code Service, Sections 2451.

<sup>3</sup> *Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space Including the Moon and Other Celestial Bodies*, 27 Jan 1967, 610 U.N.T.S. 205, 18 U.S.T. 2410. (Hereinafter referred to as 1967 OST).

<sup>4</sup> OST, Article IV.

<sup>5</sup> Charles E. Pirtle: “*Military Uses of Ocean Space and the Law of the Sea in the New Millennium*”, Ocean Development and International Law, Volume 31, numbers 1-2, 2000, page 15

<sup>6</sup> Ramey article, Section 4, paragraph A3 “Antarctic Treaty – 1959 and the United Nations Convention on the Law of the Sea – 1982”

<sup>7</sup> United Nations Convention on the Law of the Sea,  
<http://www.un.org/Depts/los/unclos/closindx.htm>

<sup>8</sup> Ibid.

<sup>9</sup> *A National Security Strategy For A New Century*, The White House, U.S. Government Printing Office, December 1999. (Hereinafter referred to as “NSS”)

<sup>10</sup> *National Military Strategy of the United States of America*, Joint Chiefs of Staff. U.S. Government Printing Office, 1997. (Hereinafter referred to as “NMS”)

<sup>11</sup> Department of Defense Dictionary of Military and Associated Terms as Amended Through 1 September 2000, Joint Publication 1-02, DoD Joint Electronic Library [www.dtic.mil/doctrine/jel/index.html](http://www.dtic.mil/doctrine/jel/index.html)

<sup>12</sup> *Air Force Basic Doctrine*, Air Force Doctrine Document 1, September 1997, page 1. (Hereinafter referred to as “AFDD-1”)

<sup>13</sup> NSS, page 12.

<sup>14</sup> Ibid, page 2

<sup>15</sup> Ibid, page 12.

<sup>16</sup> NMS, page 29

## Notes

<sup>17</sup> *Joint Force Capabilities*, Joint Publication 3-33 (13 Oct 99), page III-4.

<sup>18</sup> Ibid.

<sup>19</sup> Ibid.

<sup>20</sup> “United States Space Command” (online brochure)

<http://www.spacecom.af.mil/usspace/newfctbk.htm>

<sup>21</sup> AFDD-1, page 47

<sup>22</sup> Ibid, pages 47-48.

<sup>23</sup> Ibid, page 48.

## Chapter 3

### Operational Implications

*It is well known that when you do anything, unless you understand its actual circumstances, its nature and its relations to other things, you will not know the laws governing it, or how to do it, or be able to do it well.*

—Chairman Mao Zedong, *Selected Works* (Vol. 1)

CONTINUATION OF MEMORANDUM FROM PLA DEPARTMENT OF RESEARCH TO  
CENTRAL DEFENSE COMMITTEE (UNCLASSIFIED):

The position of the Department of Research is that the issues of sovereignty and freedom of navigation in space are of overriding import to the U.S. These concepts shape the analysis in the framework for determining *when* and *how* the U.S. will take military action to defend their interests and assets in space. Again, we believe this is important because the framework is necessary to link the U.S. policy and doctrine to its decision whether to employ military force in a “real-world” incident or crisis to protect its national space interests and assets. The next section examines the operational implications this framework has upon the military service most likely to required to execute such military actions, the USAF. We chose to structure our examination from this perspective to present the committee with a picture of how the U.S. might view this matter instead of mirror imaging how the PLA would view it.

## The Analytical Framework

Why might the U.S. consider some type of framework necessary and appropriate? Consider the remarks from one of their former top space commanders, General Richard Myers, former CINCSPACE. He recognized the need for a critical methodology or analytical framework by likening the current attitudes toward the Space “environment” to the American West during the periods of land and gold rushes.<sup>1</sup> As with the U.S. land and gold rushes, there are military advantages to be had with space based C<sup>2</sup>, C<sup>4</sup>, ISR, missile threat warning and global navigation platforms by being first in the most desirable orbits or positions relative to earth. There is an American adage that supposedly posits “Possession is nine-tenths the law.” In the “space rush” to secure positional possession advantages there are eventually bound to be conflicts, military or otherwise. General Myers noted:

The way ahead to this new framework must include three components. First, we – and by we, I mean the space community at large – must agree to some rules of the road with regard to operating in space. In our long range plan, we call this the “code of conduct,” but either way, it means the same thing – we want to avoid the Wild West, or gold rush mentality – we want to take that out of the equation. We’re trying to preclude the need for a future generation Judge Roy Bean.<sup>2</sup>

This assertion begs an important question: is an analytical framework for when and how force may be employed in space contrary to the stated provision in the 1967 OST to use space for “peaceful purposes?” As mentioned in the earlier section of this paper, the express terms of the treaty does not prohibit military activities in space. In the second place, the U.S. has not previously shown a propensity to have military threats against its vital national interests resolved or arbitrated under juridical auspices of the United Nations or some other body. The reluctance may be due to the fact that until such a body has the ability to enforce its decision, the U.S. must still rely upon its ability to protect and enforce its interests and assets. A cursory review of human history seems to lend weight to this view when it comes to vital national interests - or



interests a nation perceives to be vital. As such, until there is some type of self-enforcing treaty banning threats to, from and through space-based platforms (which does not currently exist), the U.S. will likely substitute deterrence and capability (for defense) instead. An analogy may help illustrate this matter. Even though the U.S. may have the right under the 1982 LOS Convention to navigate their vessels in international waters, it does not stop other nations from claiming some portions of internationally recognized waters as their territorial waters. Although attempting to restrict access to international waters by claiming them as territorial waters is contrary to the LOS Convention, it does not alter the fact that a nation has done so unless the freedom to navigate through the contested waterway is enforced. There is no mechanism currently short of force (or the threat of use), that can truly “force” a country to allow access if they are determined not to allow it. Ultimately the freedom of navigation is enforced by the ability of a naval force to deter such actions on the part of third parties or to project force and demonstrate the capability and intent to enforce their rights under the treaty.<sup>3</sup>

What this implies is that the U.S., and specifically the USAF, must prepare the intellectual analytical framework concerning how and when military force will be used for in an actual crisis involving their space-based interests. This framework is an important requirement linking the need for the use of force to the actual methodology in determining how force will be applied.

### **Application of Framework with Use of Force Methodology**

The analytical process for the use of military force in more traditional (i.e., terrestrial) environments is the most likely method for USAF “warfighters” will use to determine how and when the use of force is appropriate for threats against the sovereignty and freedom of navigation of U.S. space-based assets. This methodology is the “traditional” law of armed conflict (LOAC)

“use of force” analysis, albeit applied in principle to space. The methodology reflects customary practice and considerations for the use of force during military operations. This is summarized, for example, in Air Force Policy Directive 51-4, *Compliance with the Law of Armed Conflict*.

The Law of Armed Conflict (LOAC) arises from civilized nations' humanitarian desire to lessen the effects of conflicts. It protects combatants and noncombatants from unnecessary suffering, and it safeguards the basic rights of all civilians, any prisoners of war, the wounded, and the sick. The law also tries to keep conflicts from degenerating into savagery and brutality, thereby helping to restore peace. Air Force personnel will comply with LOAC in military operations and related activities during armed conflicts, no matter how these conflicts are characterized.<sup>4</sup>

What should be remembered is that there is a relatively finite body of law or no established customary international practice concerning the use of military force in space. The restrictions and prohibitions regarding use of force in land and naval warfare as expressed in the Hague Conventions were analogized and extended to aerial warfare as it developed as a new and different medium (environment) for conflict than that of land and sea.<sup>5</sup> It is not unlikely nor unreasonable to presume that existing LOAC concepts will be applied to form restrictions and prohibitions regarding space warfare (regardless of whether this is done by treaty or by practice).<sup>6</sup> The principles that seem to be part of the LOAC analysis are *authority*, *military necessity*, and *proportionality / collateral damage*. These are examined in turn.

*Authority:* Although the terms of the 1967 OST commit nations to the peaceful use of space, as mentioned before, it does not prohibit a nation from taking actions - even in space - to defend themselves against attack, just as it permits on land, sea and in the air. The authority for this justification is expressed in Article 51 of the United Nations Charter. Article 51 states in pertinent part:

Nothing in the present Charter shall impair the inherent right of individual or collective self-defense if an armed attack occurs against a Member of the United Nations, until the Security Council has taken measures necessary to maintain international peace and security.<sup>7</sup>

This leaves open to interpretation what constitute an “armed attack” justifying a use of force in self-defense. For example, must a nation actually wait to be attacked prior to defending itself if there is evidence of hostile intent (and capability) on the part of an adversary? Is the temporary denial of satellite frequencies or bandwidth by nonpermanent jamming of a satellite the equivalent to an “armed attack?” Will the justification change if the satellite is about to be, or is in fact, permanently degraded, disabled or destroyed? Does the answer change based upon the system in question, or the sovereignty of the system (if for instance a consortium of countries controlled it)? These issues are not simple ones, but we believe unless the U.S. “operators” and “warfighters” can adequately develop the concepts and articulate them, the U.S. civilian chain of command will be unwilling to risk the use of force for concern over the political ramifications. Just as effective as the decision not to use force when it is necessary would be their inability to make a *timely* decision authorizing the use of force that would prevent the loss of national-level space-based assets. Rapid operations against U.S. space-based systems may take exceptional advantage of their decision cycle.

*Military Necessity:* This concept recognizes that absent a specific prohibition against using force against a specific target, that there must still be military reason for using force against a target. Essentially, this allows for targeting those objectives that are not otherwise prohibited by the law of war and the action is considered necessary to produce a military advantage.<sup>8</sup> An appropriate military objective could be combatants, defended locations, or objects that contribute to military action through their nature, location, purpose or use make an effective contribution to military action. What the warfighters will have to be prepared to address is why the use of force against a particular objective is necessary in defense of the space-based asset or interest.

*Proportionality / Collateral Damage:* Finally, this consideration under LOAC requires combatants to minimize unnecessary or incidental injury or damage to people and minimize collateral damage to non-military property that may be in proximity to the target. This is accomplished through the proportional (amount) of force necessary to accomplish the military objective.<sup>9</sup> The amount of force will logically vary depending on whether a target must be completely destroyed, or simply damaged or disabled for some less permanent period of time. The operational implications inherent for this is what force is being used and what are the effects. The nature of a national space interest or space-based system will have an impact on this determination as well.

### **Operational Considerations**

We feel there are other factors that logically the U.S. warfighters will have to consider and examine prior to making a recommendation regarding the decision about the use of military force in space. These factors are by no means simple ones, and that is precisely why the factors require analysis and consideration. The factors:

*The nature of the U.S. interests, systems and the nature of the threat to them.*

This assists in determining the importance of the interest or threat relative to the need for the use of force. Does the incident involve a threat to a military system or a commercial system? Is the incident one of classic self-defense in response to an armed attack, or is it an attempt to use preemptive self-defense for an essentially offensive operation? Does it involve some type of permanent damage or degradation to a space-based asset or interest or is the threat of a limited duration and consequence? What if the threat is a computer attack from a terrorist organization that has no national ties? Does this change the analysis if the organization is tied to state-sponsored terrorism? We believe the more the interest or asset at stake is for self-defense of

American citizens or territorial integrity, that it is reasonable to suppose that the use of force will be viewed as a more acceptable alternative.

*Proper proportionality of force to use in response to threat.*

Nonpermanent actions to deny, degrade or disrupt a threat to U.S space-based interests may be considered more acceptable than permanent denial, degradation or disruption to a threat. For example, physical destroying a multinational communication satellite (like INMARSAT) in order to render it useless because it is being used by an enemy may be disproportionate if there are methods to “jam” the satellite that does not cause unnecessary collateral damage to third-party countries not participants to a conflict. Again, this materially depends upon the nature of the threat and the interests involved.

*Nature of the foreign or third-party space-based system (if it is the source of threat).*

Is the system solely owned and controlled by a party to a conflict that is used exclusively for military purposes? Or is the system one that has dual civilian and military use? Likewise, what if the system is a military or commercial platform of a third party not directly involved in a conflict. Such systems provide a valuable resource to maintain a contingency ability to conduct ISR or to serve as a communication node.

By way of highlighting how the U.S. has dealt with some of these considerations in the past, we note the commentary provided about DESERT STORM and ALLIED FORCE in reference to denying their Iraqi and Serbian adversary’s satellite usage through diplomatic means.

Coalition leaders, worried that Iraq (during operation DESERT SHIELD and STORM) might acquire multispectral imagery, convinced Landsat and SPOT officials (Satellite Probatoire d'Observation de la Terre/Exploratory Satellite for Earth Observation - a French satellite) not to make it available to Saddam Hussein's regime between August 1990 and 1 March 1991.<sup>10</sup>

Operation ALLIED FORCE provide an example of how we (the U.S.) can control space: Eutelsat -- a Paris-based consortium of 47 nations that includes Yugoslavia -- cut off Yugoslavian access to its communications satellites to prevent the Serbs from using the spacecraft to incite ethnic hatred in border nations.<sup>11</sup>

Again, the issue of the sovereignty of the satellite systems in question impacts what should or may be done to protect them or to deny, degrade, disrupt or destroy them. It is made even more difficult depending what the nature of the US involvement is on the spectrum of conflict. For example, during a “classical” major regional contingency scenario involving force on force, a foreign satellite belonging to a belligerent that is providing ISR data or is part of the operational C<sup>2</sup> may be viewed as a valid military target. The more problematic question arises when the satellite in question belongs to a third-party nation, a commercial entity or consortium. In such a situation, the analysis concerning military necessity versus proportionality and collateral damage will shape the determination about the level of response for use of force. Should a satellite used by an international consortium be immune from actions in self-defense because only one of its members is using the satellite against U.S. interests? What would have been the U.S. options and responses in the two examples above had the other groups not agreed to their request to limit satellite access to the Iraqis and Serbians? Does sovereignty imply that the U.S. cannot respond to hostile acts or hostile intent demonstrated by multinational assets if the U.S. interest is a “vital” interest?

Turning to the other important concept, how does freedom of navigation in space become an issue requiring a use of force analysis? One example is through the placement of satellites in the most desirable orbits (such as those passing over or near a theater of operations), or denying the advantageous orbits to an adversary. Another instance is through the access and use of geostationary orbits. During “peacetime,” there does not appear to be any justification for displacing a third-party satellite from a particular orbit desired for a national satellite. As

previously discussed, there is very evident a “first in time, first in right” entitlement to the orbits. During a conflict, this may change. Depending on the degree of necessity, denying a particular orbit to a belligerent or third party may be appropriate if that space-based asset is being actively used in a conflict (this presupposes intelligence confirms this supposition). Could the U.S., or any nation, issue the Space equivalent of a Notice to Airmen or Notice to Mariners? The notice would describe the area of operations and warn that ISR or C<sup>2</sup> satellites passing over the conflict area do so at their own peril (much like a third party operating an intelligence collecting platform in an area of operations during a conflict). This does provide at least some notice and for third parties to alter courses or to take necessary actions to either cease using their platforms in that area or to ensure their platforms are not being used in a manner inconsistent with our interests. Geostationary orbits are very desirable and important for the ability of systems in those orbits to maintain virtually worldwide coverage (whether C<sup>2</sup> or ISR). A geostationary orbit is an equatorial orbit in which satellites maintain their position relative to a fixed point on the earth by maintaining an orbital speed equal to that of the earth’s rotation. One satellite in geostationary orbit can observe or cover 42 percent of the earth's surface and a constellation of 3 equidistant geostationary satellites can observe or cover all of the earth between 81° South and 81° North.<sup>12</sup> During DESERT STORM, the U.S. certainly realized the importance of geostationary orbits.

For the Army, the geostationary civilian satellites proved to be more useful than the military polar-orbiting satellites. The civilian satellites re-imaged the same portion of the earth every thirty minutes in contrast to the twelve-hour cycle of the polar satellites."<sup>13</sup>

Not surprisingly, because the geostationary orbits are popular for other commercial and national uses (such as communications and ISR), these orbits are valuable resources. Yet due to constraints on how close together satellites can be placed without interfering with their communication frequencies and the physical number of satellites that can be accommodated

relative to the equator there are as a result a limited number of satellites that can be placed in geostationary orbit. While the number of satellites in geostationary orbit has not reached maximum capacity, there are better spots (relative to the needs of a nation) around the equator to have a geostationary satellite than others. When those available orbits have been taken, what will the U.S. do if a non-hostile third-party satellite is where they need to move or place one of their own satellites during a conflict or contingency. During peacetime, the issue about needing a particular space would presumably be handled diplomatically or commercially. A similar approach may be taken during a conflict, but if the U.S. believed it had to ensure their own access could, and perhaps more importantly, would the U.S. unilaterally physically move or remove a foreign satellite from a geostationary orbit and replace it with one of their own?

There is one final and important point for consideration. In the analysis for when use of force is appropriate against enemy space-based assets, the U.S. must recognize that military use of U.S. and foreign space-based commercial and national assets during an international conflict renders those systems equally subject to attack, using their own analysis. Turning to the last section of this paper, we present for the committee's consideration what options the U.S. has to improve their analytical framework and use of force methodology regarding the sovereignty and freedom of navigation of their space-based interests and assets.

### Notes

<sup>1</sup> General Richard B. Myers, "*Implementing our Vision for Space Control*" United States Space Foundation, Colorado Springs, Colorado, 7 April 1999  
<http://www.spacecom.af.mil/usspace/speech15.htm>

<sup>2</sup> Ibid.

<sup>3</sup> Charles E. Pirtle, "*Military Uses of Ocean Space and the Law of the Sea in the New Millennium*" Ocean Development and International Law, Vol 31, Numbers 1-2, 2000. Pages 7-46, page 22).



## Notes

<sup>4</sup> “*Compliance with the Law of Armed Conflict*,” Air Force Policy Directive 51-4, 26 April 1993, paragraphs 1.1 and 1.2.

<sup>5</sup> Hays Parks, “Air War and the Law of War” 1990, 32 Air Force Law Review 1.

<sup>6</sup> Ibid.

<sup>7</sup> United Nations Charter, Article 51, <http://www.un.org/aboutun/charter/chapter7.htm>.

<sup>8</sup> U.S. Army Field Manual 27-10, *Law of Land Warfare*, and Geneva Protocol I, art. 52.

<sup>9</sup> Ibid.

<sup>10</sup> Joint Forces and Capabilities Course Book, Air University, page 189 citing “*The Ultimate High Ground: Space Support to the Army*,” pp 9-13; USSPACECOM Assessment, pp 35-38; Anson and Cummings, “The First Space War,” pp 52-53.

<sup>11</sup> Ibid, p.206, citing “*Using Space to Win Wars*,” by Theodore R. Simpson. Reprinted from Aerospace America, Feb 2000.

<sup>12</sup> Dr. T.S. Kelso, “*Basics of the Geostationary Orbit*,” Satellite Times, May, 1998, <http://celestrak.com/columns/v04n07/>.

<sup>13</sup> Joint Forces and Capabilities Course Book, Air University, page 188, citing “*Beyond Horizons, A Half Century of Air Force Leadership*,” David N. Spires, Chapter 7, 1998, 243-269 and 335-340.

## Chapter 4

### Courses of Action

*The way to win a battle according to military science is know the rhythms of the specific opponents, and use rhythms that your opponents do not expect, producing formless rhythms from rhythms of wisdom.*

—Miyamoto Musashi, *The Book of Five Rings*

CONTINUATION AND CONCLUSION OF MEMORANDUM FROM PLA DEPARTMENT OF RESEARCH TO CENTRAL DEFENSE COMMITTEE (UNCLASSIFIED):

What actions can the U.S. take to resolve the ambiguity associated with sovereignty and freedom of navigation underlying the U.S. use of force analysis? We believe they have two options. The first is to have the U.N. amend the 1967 OST. The second is to incorporate the general analytical framework and use of force methodology into common “joint” doctrine that can be exercised with their civilian chain of command. The Department of Research acknowledges the problems associated with attempting to discuss with certainty decision-making processes that turn upon fact and situation-specific events. However, the two potential courses of action identified appear to be the most logical based upon our analysis.

#### **Amend the 1967 Outer Space Treaty**

One method the U.S. military may propose to “clarify” how and when force is used in space is to request their civilian leadership propose to the international community an amendment to the 1967 OST. This amendment should include specific language regarding self-

defense or other use of military actions in space. It should specifically include language regarding the use of force in relation to sovereignty and freedom of navigation as they relate and impact upon military operations. The major positive aspect of this option is that it eliminates the uncertainty and provides specific and express authority for military use of force. The negative aspects are the lengths of time this process would take, and the relatively unlikely ability of the U.S. to get a majority of U.N. members to agree to the use of force in space. This is especially unlikely when the use of force in space benefits primarily only the U.S. More importantly though, there might be a concerted movement in the face of obvious U.S intentions to use force in space to specifically eliminate and prohibit ANY military activities in space – including ISR, C<sup>2</sup> and C<sup>4</sup>. Logically, most nations are unable to compete with the US in space for the foreseeable future on an equal footing, so there is virtually no incentive for them to support or explicitly authorize military actions in space. In fact, this is probably quite unlikely. The bulk of the international community appears to have a very definite interest in limiting the ability or authority to conduct military operations in space based if for no other reason than on the lack of capability on their part. Quite frankly, our assessment to the committee is that Article 51 of the U.N. Charter provides sufficient legal authority and basis for allowing any nation to take actions necessary in self-defense, even in space. Accordingly, in our view, amending the 1967 OST is unnecessary and may prove to be counterproductive for the U.S; hence they are unlikely to pursue this course of action. Furthermore, acknowledging anticipatory self-defense is a sensitive issue, we believe that the Article 51 analysis would support any such U.S. actions in space IF there were sufficient intelligence to demonstrate imminent hostile intent.

## **Incorporate Concepts into Policy and Doctrine**

None of the U.S. space policies or doctrine discussed in Chapter 2 specifically addressed sovereignty and freedom of navigation, yet these are important aspects in the analytical framework and use of force methodology. The decision to use force against a space based asset, especially force that may permanently damage or destroy the system, is a decision that will undoubtedly require the highest levels of command approval and an extensive justification and approval process. Yet these will also likely be time sensitive decisions that will make a difference between protecting their interests and assets or, as the Americans say, “closing the barn door after the horse has gone.” The use of training scenarios using sovereignty and freedom of navigation, as teaching tools would, however, aid in sensitizing senior political and military leadership to the necessity and requirements for protecting US interests in space, with force. It will be too late for the U.S. to try and put an experienced and capable decision-making architecture in place for the use of force approval process when a decision is needed in minutes or hours, not days.

The refrain to “Train like you fight, and fight like you train” is supposedly a common mantra in the U.S. military. When considering the international implications and ramifications for responding to an attack against their national space interests assets, the U.S. military, and USAF in particular must to explain the reasoning and rationale for why the use of force to defend those interests and assets is justified. Just as important, the U.S. will need to understand and explain why their actions are consistent with international law or customary international practice. Finally, this analytical framework and methodology for determining how and when the use of force in space is appropriate should be incorporated specifically into their joint or service-specific doctrine, tactics, techniques and procedures. Incorporating the concepts, framework and

analysis into their doctrine will optimize the unity of effort necessary for an effective defense of their national space interests and assets. Obviously this should be done prior to the need to actually make such decisions.

### **PLA Conclusions**

There is no guarantee to predict what actions the U.S. will take in every situation. We make the following conclusions for the committee's consideration, based upon our research. First, the U.S. appears vulnerable to substantial ad hoc decision-making unguided by a consistent analytical framework. They do not appear to have fully incorporated the use of force analytical framework and methodology into their doctrine regarding space. Likewise they do not appear to exercise any decision-making process with any consistency. Second, the keys to influencing the U.S. decision-making processes that they do possess are to stress the processes with the greatest number of variables and conditions requiring analysis while simultaneously conducting our actions as rapidly as possible to achieve our objectives.

This concludes the memorandum from the PLA Department of Research

## Chapter 5

### Conclusions

*We can't be deceived by the fact that we enjoyed space dominance in Kosovo and in the Gulf War. We controlled the high ground, not because of superior technologies or strategies, but because our adversaries simply didn't use space. We gained space superiority by default; this was our bye round, and a key take-away is that the whole world took notice. Just as Milosovic modified his air defenses to try and deny our air superiority, others will modify their forces to try and deny our space superiority*

—General Richard B. Myers, USAF

Although the previous chapters were styled in a fictional manner, the thoughts and conclusions behind the writing are, in this author's opinion, fair and accurate representations of the current state of thought regarding the use of force vis-a-vis sovereignty and freedom of navigation in space. For the same reasons articulated in more detail in the previous chapter, amending the 1967 OST is at best impracticable and at the worst, counterproductive. Many people and organizations desire certainty when faced with the unknown. However, absent an explicit prohibition against conducting military operations in space, the current international regime and customary practice regarding self-defense would actually permit actions in space necessary in self-defense to an armed attack. The U.S. should not jeopardize its operational agility, flexibility and dominant position in regard to protection of space-based interests and assets simply because a more expressly defined authorization for the use of force specifically in space is desired.

The second course of action, involving the incorporation of the analytical framework and use of force methodology into doctrine and training has considerable merit. Incorporating the analytical framework and use of force methodology into joint and service doctrine may prove very beneficial to provide a common frame of reference and language for all warfighters and provide civilian leadership with a tangible framework to aid in the decision-making process during such crises or incidents. As the premiere aerospace power, it is logical that the USAF takes the lead on doing this. Furthermore, simply undertaking the process of attempting to reduce these concepts to “doctrine” will encourage a healthy debate and consideration for how and when the use of force will be appropriate when the sovereignty or freedom of navigation of U.S. interests or assets are placed in jeopardy. There are many different possible factual scenarios; hence articulating precise or concrete guidance regarding the operational implications is difficult and perhaps even counterproductive to mental flexibility and agility in analysis. This does not mean that the general framework and rules of the road should not be stated as a guide or frame of reference.

## **Recommendations**

1. Incorporate the analytical framework and use of force methodology described above in joint and service doctrine.
2. Formulate realistic and challenging training exercises that require military and civilian decision-makers to interact concerning the decisions to use or not use force in incidents involving the sovereignty and freedom of navigation of our space-based assets.
3. Exercise and practice the processes and use of force requirements extensively both vertically throughout the command structure (military and civilian) but horizontally as well, across functional boundaries.





## **Appendix**

### **1967 Outer Space Treaty**

Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies

Done at Washington, London, and Moscow January 27, 1967; Ratification advised by the Senate of the United States of America April 25, 1967; Ratified by the President of the United States of America May 24, 1967; Ratification of the United States of America deposited at Washington, London, and Moscow October 10, 1967; Proclaimed by the President of the United States of America October 10, 1967; Entered into force October 10, 1967.

BY THE PRESIDENT OF THE UNITED STATES OF AMERICA A PROCLAMATION

WHEREAS the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies, was signed at Washington, London, and Moscow on January 27, 1967 in behalf of the United States of America, the United Kingdom of Great Britain and Northern Ireland, and the Union of Soviet Socialist Republics and was signed at one or more of the three capitals in behalf of a number of other States;

WHEREAS the text of the Treaty, in the English, Russian, French, Spanish, and Chinese languages, as certified by the Department of State of the United States of America, is word for word as follows:

TREATY ON PRINCIPLES GOVERNING THE ACTIVITIES OF STATES IN THE EXPLORATION AND USE OF OUTER SPACE, INCLUDING THE MOON AND OTHER CELESTIAL BODIES

The States Parties to this Treaty, Inspired by the great prospects opening up before mankind as a result of man's entry into outer space, Recognizing the common interest of all mankind in the progress of the exploration and use of outer space for peaceful purposes, Believing that the exploration and use of outer space should be carried on for the benefit of all peoples irrespective of the degree of their economic or scientific development, Desiring to contribute to broad international co-operation in the scientific as well as the legal aspects of the exploration and use of outer space for peaceful purposes, Believing that such co-operation will contribute to the development of mutual understanding and to the strengthening of friendly relations between

States and peoples, Recalling resolution 1962 (XVIII), entitled "Declaration of Legal Principles Governing the Activities of States in the Exploration and Use of Outer Space", which was adopted unanimously by the United Nations General Assembly on 13 December 1963, Recalling resolution 1884 (XVIII), calling upon States to refrain from placing in orbit around the Earth any objects carrying nuclear weapons or any other kinds of weapon of mass destruction or from installing such weapons or celestial bodies, which was adopted unanimously by the United Nations General Assembly on 17 October 1963,

Taking account of United Nations General Assembly resolution 110 (II) of 3 November 1947, which condemned propaganda designed or likely to provoke or encourage any threat to the peace, breach of the peace or act of aggression, and considering that the aforementioned resolution is applicable to outer space, Convinced that a Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies, will further the Purposes and Principles of the Charter of the United Nations, [FN:1 TS 993; 59 Stat. 1031.] Have agreed on the following:

#### Article I

The exploration and use of outer space, including the moon and other celestial bodies, shall be carried out for the benefit and in the interests of all countries, irrespective of their degree of economic or scientific development, and shall be the province of all mankind. Outer space, including the moon and other celestial bodies, shall be free for exploration and use by all States without discrimination of any kind, on a basis of equality and in accordance with international law, and there shall be free access to all areas of celestial bodies. There shall be freedom of scientific investigation in outer space, including the moon and other celestial bodies, and States shall facilitate and encourage international co-operation in such investigation.

#### Article II

Outer space, including the moon and other celestial bodies, is not subject to national appropriation by claim of sovereignty, by means of use or occupation, or by any other means.

#### Article III

States Parties to the Treaty shall carry on activities in the exploration and use of outer space, including the moon and other celestial bodies, in accordance with international law, including the Charter of the United Nations, in the interest of maintaining international peace and security and promoting international co-operation and understanding.

#### Article IV

States Parties to the Treaty undertake not to place in orbit around the Earth any objects carrying nuclear weapons or any other kinds of weapons of mass destruction, install such weapons on celestial bodies, or station such weapons in outer space in any other manner. The moon and other celestial bodies shall be used by all States Parties to the Treaty exclusively for peaceful purposes. The establishment of military bases, installations and fortifications, the testing of any type of weapons and the conduct of military maneuvers on celestial bodies shall be forbidden.

The use of military personnel for scientific research or for any other peaceful purposes shall not be prohibited. The use of any equipment or facility necessary for peaceful exploration of the moon and other celestial bodies shall also not be prohibited.

#### Article V

States Parties to the Treaty shall regard astronauts as envoys of mankind in outer space and shall render to them all possible assistance in the event of accident, distress, or emergency landing on the territory of another State Party or on the high seas. When astronauts make such a landing, they shall be safely and promptly returned to the State of registry of their space vehicle. In carrying on activities in outer space and on celestial bodies, the astronauts of one State Party shall render all possible assistance to the astronauts of other States Parties. States Parties to the Treaty shall immediately inform the other States Parties to the Treaty or the Secretary-General of the United Nations of any phenomena they discover in outer space, including the moon and the other celestial bodies, which could constitute a danger to the life or health of astronauts.

#### Article VI

States Parties to the Treaty shall bear international responsibility for national activities in outer space, including the moon and other celestial bodies, whether such activities are carried on by governmental agencies or by non-governmental entities, and for assuring that national activities are carried out in conformity with the provisions set forth in the present Treaty. The activities of non-governmental entities in outer space, including the moon and other celestial bodies, shall require authorization and continuing supervision by the appropriate State Party to the Treaty. When activities are carried on in outer space, including the moon and other celestial bodies, by an international organization, responsibility for compliance with this Treaty shall be borne both by the international organization and by the States Parties to the Treaty participating in such organization.

#### Article VII

Each State Party to the Treaty that launches or procures the launching of an object into outer space, including the moon and other celestial bodies, and each State Party from whose territory or facility an object is launched, is internationally liable for damage to another State Party to the Treaty or to its natural or juridical persons by such object or its component parts on the Earth, in air space or in outer space, including the moon and other celestial bodies.

#### Article VIII

A State Party to the Treaty on whose registry an object launched into outer space is carried shall retain jurisdiction and control over such object, and over any personnel thereof, while in outer space or on a celestial body. Ownership of objects launched into outer space, including objects landed or constructed on a celestial body, and of their component parts, is not affected by their presence in outer space or on a celestial body or by their return to the Earth. Such objects or component parts found beyond the limits of the State Party to the Treaty on whose registry they

are carried shall be returned to that State Party, which shall, upon request, furnish identifying data prior to their return.

#### Article IX

In the exploration and use of outer space, including the moon and other celestial bodies, States Parties to the Treaty shall be guided by the principle of co-operation and mutual assistance and shall conduct all their activities in outer space, including the moon and other celestial bodies, with due regard to the corresponding interests of all other States Parties to the Treaty. States Parties to the Treaty shall pursue studies of outer space, including the moon and other celestial bodies, and conduct exploration of them so as to avoid their harmful contamination and also adverse changes in the environment of the Earth resulting from the introduction of extraterrestrial matter and, where necessary, shall adopt appropriate measures for this purpose. If a State Party to the Treaty has reason to believe that an activity or experiment planned by it or its nationals in outer space, including the moon and other celestial bodies, would cause potentially harmful interference with activities of other States Parties in the peaceful exploration and use of outer space, including the moon and other celestial bodies, it shall undertake appropriate international consultations before proceeding with any such activity or experiment. A State Party to the Treaty which has reason to believe that an activity or experiment planned by another State Party in outer space, including the moon and other celestial bodies, would cause potentially harmful interference with activities in the peaceful exploration and use of outer space, including the moon and other celestial bodies, may request consultation concerning the activity or experiment.

#### Article X

In order to promote international co-operation in the exploration and use of outer space, including the moon and other celestial bodies, in conformity with the purposes of this Treaty, the States Parties to the Treaty shall consider on a basis of equality any requests by other States Parties to the Treaty to be afforded an opportunity to observe the flight of space objects launched by those States. The nature of such an opportunity for observation and the conditions under which it could be afforded shall be determined by agreement between the States concerned.

#### Article XI

In order to promote international co-operation in the peaceful exploration and use of outer space, States Parties to the Treaty conducting activities in outer space, including the moon and other celestial bodies, agree to inform the Secretary-General of the United Nations as well as the public and the international scientific community, to the greatest extent feasible and practicable, of the nature, conduct, locations and results of such activities. On receiving the said information, the Secretary-General of the United Nations should be prepared to disseminate it immediately and effectively.

#### Article XII

All stations, installations, equipment and space vehicles on the moon and other celestial bodies shall be open to representatives of other States Parties to the Treaty on a basis of reciprocity. Such representatives shall give reasonable advance notice of a projected visit, in order that appropriate consultations may be held and that maximum precautions may be taken to assure safety and to avoid interference with normal operations in the facility to be visited.

#### Article XIII

The provisions of this Treaty shall apply to the activities of States Parties to the Treaty in the exploration and use of outer space, including the moon and other celestial bodies, whether such activities are carried on by a single State Party to the Treaty or jointly with other States, including cases where they are carried on within the framework of international inter-governmental organizations.

Any practical questions arising in connection with activities carried on by international inter-governmental organizations in the exploration and use of outer space, including the moon and other celestial bodies, shall be resolved by the States Parties to the Treaty either with the appropriate international organization or with one or more State members of that international organization, which are Parties to this Treaty.

#### Article XIV

1. This Treaty shall be open to all States for signature. Any State which does not sign this Treaty before its entry into force in accordance with paragraph 3 of this article may accede to it at any time.
2. This Treaty shall be subject to ratification by signatory States. Instruments of ratification and instruments of accession shall be deposited with the Governments of the United States of America, the United Kingdom of Great Britain and Northern Ireland and the Union of Soviet Socialist Republics, which are hereby designated the Depositary Governments.
3. This Treaty shall enter into force upon the deposit of instruments of ratification by five Governments including the Governments designated as Depositary Governments under this Treaty.
4. For States whose instruments of ratification or accession are deposited subsequent to the entry into force of this Treaty, it shall enter into force on the date of the deposit of their instruments of ratification or accession.
5. The Depositary Governments shall promptly inform all signatory and acceding States of the date of each signature, the date of deposit of each instrument of ratification of and accession to this Treaty, the date of its entry into force and other notices.
6. This Treaty shall be registered by the Depositary Governments pursuant to Article 102 of the Charter of the United Nations.

#### Article XV

Any State Party to the Treaty may propose amendments to this Treaty. Amendments shall enter into force for each State Party to the Treaty accepting the amendments upon their acceptance by

a majority of the States Parties to the Treaty and thereafter for each remaining State Party to the Treaty on the date of acceptance by it.

#### Article XVI

Any State Party to the Treaty may give notice of its withdrawal from the Treaty one year after its entry into force by written notification to the Depositary Governments. Such withdrawal shall take effect one year from the date of receipt of this notification.

#### Article XVII

This Treaty, of which the English, Russian, French, Spanish and Chinese texts are equally authentic, shall be deposited in the archives of the Depositary Governments. Duly certified copies of this Treaty shall be transmitted by the Depositary Governments to the Governments of the signatory and acceding States.

IN WITNESS WHEREOF the undersigned, duly authorized, have signed this Treaty.  
DONE in triplicate, at the cities of Washington, London and Moscow, this twenty-seventh day of January one thousand nine hundred sixty-seven.

FOR THE UNITED STATES OF  
AMERICA:

FOR THE UNITED KINGDOM OF  
GREAT BRITAIN AND NORTHERN  
IRELAND:

FOR THE UNION OF SOVIET  
SOCIALIST REPUBLICS:

FOR CHILE:

FOR MEXICO:

FOR CHINA:

FOR ITALY:

FOR HONDURAS:

FOR ETHIOPIA:

FOR GHANA:

FOR CYPRUS:

FOR CANADA:

FOR BULGARIA:

FOR AUSTRALIA:

FOR DENMARK:

FOR HUNGARY:

FOR ICELAND:

FOR CZECHOSLOVAKIA:

FOR JAPAN:

FOR ROMANIA:

FOR POLAND:

FOR TUNISIA:

FOR NEW ZEALAND:

FOR COLOMBIA:

FOR FINLAND:

FOR PANAMA:

FOR LAOS:

FOR GREECE:

FOR THE PHILIPPINES:

FOR TURKEY:

FOR YUGOSLAVIA:

FOR AFGHANISTAN:

FOR ARGENTINA:

FOR THE UNITED ARAB REPUBLIC:

FOR HAITI:

FOR LUXEMBOURG:

FOR VIET-NAM:

FOR VENEZUELA:

FOR THE FEDERAL REPUBLIC OF  
GERMANY:

FOR ISRAEL:

FOR EL SALVADOR:

FOR THAILAND:

FOR SWEDEN:

FOR ECUADOR:

FOR TOGO:

FOR THE DOMINICAN REPUBLIC:

FOR SWITZERLAND:

FOR BURUNDI:  
FOR IRELAND:  
FOR CAMEROON:  
FOR INDONESIA:  
FOR BOLIVIA:  
FOR BOTSWANA:  
FOR LESOTHO:  
FOR KOREA:  
FOR THE CONGO (KINSHASA):  
FOR URUGUAY:  
FOR THE CENTRAL AFRICAN  
REPUBLIC:  
FOR RWANDA:  
FOR NICARAGUA:  
FOR THE NIGER:  
FOR SOMALIA: Feb. 2, 1967  
FOR JORDAN: Feb. 2, 1967  
FOR JORDAN: Feb. 2, 1967  
FOR BRAZIL: February 2nd 1967  
FOR BELGIUM: February 2nd 1967  
FOR NEPAL: February 3rd 1967  
FOR NORWAY: February 3, 1967  
FOR GUYANA: February 3, 1967  
FOR THE NETHERLANDS: February 10,  
1967  
FOR AUSTRIA: February 10 1967  
FOR MALAYSIA: February 20, 1967  
FOR LEBANON: January 23, 1967  
FOR IRAQ: 2. 27. 1967  
FOR SOUTH AFRICA: 1 Mar 1967  
FOR THE UPPER VOLTA: 3 Mar 1967  
FOR INDIA: 3-3-1967  
FOR SAN MARINO: 4/21/67

I CERTIFY THAT the foregoing is a true copy of the United States depositary original of the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies, which original, done in the English, Russian, French, Spanish, and Chinese languages, was opened for signature at Washington on January 27, 1967, was signed on that date for the United States of America, the United Kingdom of Great Britain and Northern Ireland, the Union of Soviet Socialist Republics and fifty-seven other States and subsequently for seventeen additional States, and is deposited in the archives of the Government of the United States of America.

IN TESTIMONY WHEREOF, I, DEAN RUSK, Secretary of State of the United States of America, have hereunto caused the seal of the Department of State to be affixed and my name subscribed by the Authentication Officer of the said Department, at the city of Washington, in the District of Columbia, this twenty-seventh day of April, 1967.

Secretary of State

By Authentication Officer Department of State

WHEREAS the Senate of the United States of America by its resolution of April 25, 1967, two thirds of the Senators present concurring therein, did advise and consent to the ratification of the Treaty;

WHEREAS the President of the United States of America on May 24, 1967 duly ratified the Treaty, in pursuance of the advice and consent of the Senate;

WHEREAS Article XIV provides that the Treaty shall enter into force upon the deposit of instruments of ratification by five Governments including those designated as Depositary Governments, namely the Governments of the United States of America, the United Kingdom of Great Britain and Northern Ireland, and the Union of Soviet Socialist Republics;

WHEREAS instruments of ratification were deposited with the Government of the United States of America as follows: Bulgaria on April 11, 1967; Niger on May 3, 1967; Czechoslovakia on May 22, 1967; Hungary on June 26, 1967; Finland on July 12, 1967; Sierra Leone on July 14, 1967; and Denmark, Canada, Japan, Australia, the Union of Soviet Socialist Republics, the United Kingdom of Great Britain and Northern Ireland, and the United States of America on October 10, 1967;

AND WHEREAS, pursuant to the aforesaid provisions of Article XIV, the Treaty entered into force on October 10, 1967;

NOW, THEREFORE, be it known that I, Lyndon B. Johnson, President of the United States of America, do hereby proclaim and make public the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies, to the end that the Treaty and every article and clause thereof shall be observed and fulfilled with good faith, on and after October 10, 1967, by the United States of America and by



the citizens of the United States of America and all other persons subject to the jurisdiction thereof.

IN TESTIMONY WHEREOF, I have hereunto set my hand and caused the Seal of the United States of America to be affixed.

DONE at the city of Washington this tenth day of October in the year of our Lord one thousand nine hundred sixty-seven and of the Independence of the United States of America the one hundred ninety-second.

LYNDON B. JOHNSON

By the President: DEAN RUSK Secretary of State

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